

## Comparison of Household Hazardous Waste Programs

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Conducted for

Metro Solid Waste and Recycling Department  
Portland, Oregon

Prepared by

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<b>Executive Summary.....</b>	<b>1</b>
<b>1 Overview of HHW Program Comparison Study .....</b>	<b>5</b>
1.1 Project Background and Purpose.....	5
1.2 Survey Topics and Report Overview .....	5
1.3 Key Findings.....	6
1.4 Survey Methods .....	6
1.5 Characteristics of Programs Surveyed .....	8
<b>2 Program Facilities and Services .....</b>	<b>13</b>
2.1 Fixed Facilities.....	13
2.2 Mobile Collection Events .....	15
2.3 Door-to-door Collection Service .....	17
2.4 CEG Services.....	18
<b>3 HHW Materials and Safety.....</b>	<b>19</b>
3.1 Materials Accepted.....	19
3.2 Material Handling .....	23
3.3 Material Disposition .....	26
3.4 Safety .....	27
<b>4 Program Costs .....</b>	<b>29</b>
4.1 Total HHW Program Costs.....	29
4.2 Cost per Pound of HHW Collected.....	29
4.3 Cost per Participant in HHW Programs.....	29
<b>5 In-house and Contractor-operated Programs .....</b>	<b>31</b>
5.1 In-house and Contractor Costs .....	31
5.2 Cost Comparisons.....	32
5.3 Reported Benefits and Drawbacks of Program Operators .....	32
<b>6 Conclusions.....</b>	<b>35</b>
<b>Appendix A. Summary of HHW Programs Surveyed.....</b>	<b>37</b>
<b>Appendix B. HHW Program Online Survey Instrument.....</b>	<b>41</b>

## List of Tables

---

Table 1. Summary Comparison of HHW Programs, by Type (median) .....	2
Table 2. HHW Programs Included in Comparison Study .....	8
Table 3. Overview of HHW Programs Surveyed (2004 data) .....	10
Table 4. HHW Collection Services, by Program .....	11
Table 5. Summary of Fixed HHW Collection Facilities, by Program .....	14
Table 6. Summary of Mobile HHW Collection Events, by Program .....	16
Table 7. Overview of Materials Accepted .....	20
Table 8. Overview of Auto-Related Waste, Handling and Quantity .....	21
Table 9. Overview of Latex Paint, Handling and Quantity .....	22
Table 10. Overview of HHW Handling Responsibilities .....	24
Table 11. Safety Activities and Injury Records among HHW Programs .....	28
Table 12. HHW Program Costs, Total and by Pound and Participant .....	30
Table 13. Cost Comparison of In-house and Contractor-operated HHW Programs .....	32

## List of Figures

---

Figure 1. Summary of Key Program Measures: Metro and Other HHW Programs .....	3
Figure 2. Map of HHW Programs Included in Comparison Study .....	7
Figure 3. HHW Programs Surveyed with Door-to-door Collection Service .....	17
Figure 4. HHW Programs that Offer Service to CEGs .....	18
Figure 5. HHW Handling Responsibilities, In-house or Contractor .....	25
Figure 6. Estimated Percentage of Wastes Landfilled or Incinerated .....	27
Figure 7. Distribution of In-house and Contractor Costs for HHW Programs .....	31

## Executive Summary

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The project team performed a comparative analysis of household hazardous waste (HHW) programs by conducting an online and telephone survey to obtain data from 25 jurisdictions around the United States. This report presents summary findings for the year 2004 for these 25 programs and related comparisons with Metro's HHW program on the following topics:

- **Program demographics and characteristics**, including populations, participants, HHW facilities, mobile collection events, and other HHW services;
- **Program facilities and services**, including fixed facilities, mobile events, door-to-door collection, and services provided to Conditionally Exempt Generators (CEGs);
- **HHW materials, staff responsibilities, and safety**, including types of materials and responsibilities for waste handling activities;
- **Program costs** in 2004, including administration, management, processing, packaging, transportation, disposal, supplies, education, promotion, and maintenance; and
- **In-house and contractor-operated programs**, including respondent opinions on the benefits and drawbacks of these program types as well as cost comparisons between the two operator types.

Key results of this HHW comparison study include the following findings, based on 25 leading HHW programs around the nation.<sup>1</sup>

- **The 25 programs reviewed in the study offered HHW services to a median population of 600,000 residents, or about 241,000 households. They served a median of 16,400 customers in 2004, or 7% of households.** In comparison, Metro's service area contains more than 550,000 households. The program served nearly 53,000 customers, or 10% of households, in 2004.
- **HHW collection ranged from about 213,000 pounds to nearly 9 million pounds, with a median level of 1.4 million pounds total and 75 pounds per participant.** Metro collected 78 pounds of HHW per participant, for a total of nearly 4.1 million pounds of waste in 2004.
- **All but one program offered HHW collection at fixed facilities. The median number of fixed facilities is two, operating 250 days per year and serving 79 participants per day.** Metro has two HHW facilities that typically operate 312 days per year and serve 137 customers per day.

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<sup>1</sup> This report typically presents summary results from the 25 programs reviewed in the form of median values. Medians present a realistic representation of the midpoint of the observed values and are less subject to influence from outlier values than averages (means). In summarizing data from individual programs, the report uses averages for measures such as the number of participants per event, pounds of HHW collected per participant, and program cost per pound.

- **More than two-thirds of HHW programs (18 of 25) offer mobile collection events, with a median of 17 operation days per year and 161 participants per day.** Metro held mobile events for 60 days and served nearly the same number of daily customers.
- **The typical program accepts 13 of 18 major HHW categories,** plus auto wastes and latex paint. Metro accepts all but one HHW category (electronic waste), including highly hazardous materials such as radioactive waste and ammunition/explosives – a greater variety of waste types (17) than any other program interviewed.
- **Annual costs among the 25 programs ranged from about \$120,000 to nearly \$5.5 million in 2004. Median costs were \$55 per participant served and \$0.67 per pound of HHW collected.** Metro's program cost nearly \$3.5 million in 2004, for an average of \$66 per participant and \$0.85 per pound.

Table 1 summarizes key results for all programs, including medians and ranges of values. The table also divides HHW programs between those that are primarily operated by in-house staff or contractors. Few programs are entirely operated by in-house staff or by contractors. The consultant examined the distribution of reported program costs and activities to classify programs as primarily in-house or contractor-operated. Using these categories, the study analyzed responses from 10 contractor-operated programs and 15 in-house programs, including Metro's HHW program.

**Table 1. Summary Comparison of HHW Programs, by Type (median)**

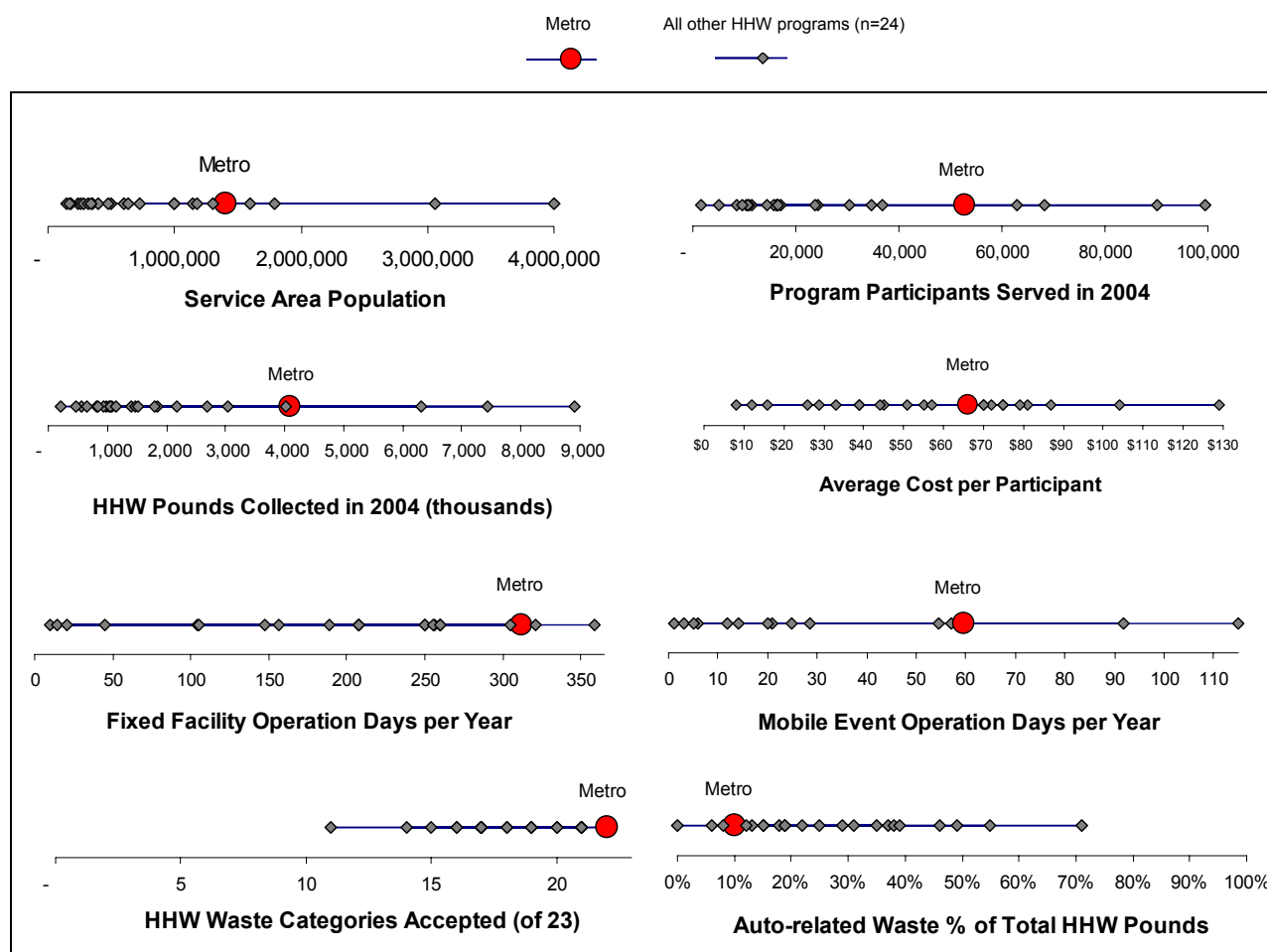
Summary of Programs	All Programs	Metro	In-house	Contractor	Minimum	Maximum
Total Participants	<b>16,400</b>	52,813	16,319	20,481	1,589	99,596
Participation (% of households)	<b>7%</b>	10%	7%	8%	2%	24%
Total Pounds HHW Collected	<b>1,400,000</b>	4,095,798	1,400,000	1,600,372	212,763	8,900,000
Pounds per Participant	<b>75</b>	78	78	72	22	189
Total Reported Program Costs	<b>\$757,200</b>	\$3,484,800	\$465,320	\$1,635,816	\$118,952	\$5,445,118
Cost per Participant	<b>\$55</b>	\$66	\$39	\$72	\$8	\$129
Cost per HHW Pound	<b>\$0.67</b>	\$0.85	\$0.48	\$0.82	\$0.21	\$2.02
Fixed Facility Days per Year*	<b>250</b>	312	260	147	10	359
Mobile Event Days per Year*	<b>17</b>	60	13	25	0	115
% HHW Categories Accepted†	<b>78%</b>	96%	78%	80%	48%	96%

\* Of programs offering fixed facilities (n=24) and mobile collection events (n=18).

† Of 23 categories of HHW materials reviewed in the study.

Figure 1 illustrates how Metro compares with the other 24 programs reviewed, for such measures as service area population, participants served, HHW pounds collected, cost per participant, operation days, and HHW waste types accepted. The large red circle indicates program measures for Metro, and the small gray diamonds represent the other programs included in the study.

**Figure 1. Summary of Key Program Measures: Metro and Other HHW Programs**



Metro's household hazardous waste program offers more comprehensive services than other programs in terms of types and amounts of wastes collected, numbers and types of customers served, and availability of services. Metro handles more types of HHW, including highly hazardous content such as radioactive and explosive materials, than most other programs. In turn, Metro collects fewer automotive wastes, which are handled at relatively low cost in comparison to more hazardous materials, than most other programs. Programs with lower costs than Metro generally provide lower levels of HHW collection and management services in terms of HHW materials accepted, amounts collected, and availability of services.

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# 1 Overview of HHW Program Comparison Study

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## 1.1 Project Background and Purpose

Metro's Solid Waste and Recycling Department operates a comprehensive household hazardous waste (HHW) collection program for its ratepayers. Metro strives to provide convenient, environmentally sound, and comprehensive HHW services as cost-effectively and safely as possible. To compare its HHW program services and costs with its peer programs, Metro commissioned Cascadia Consulting Group to survey other HHW programs nationwide and conduct an independent analysis. Philip Services Corporation also contributed to the study, including assisting with development of the survey and providing information on contractor-operated programs. In addition to comparing other programs to Metro's program, the study also obtained feedback from the programs interviewed on the benefits and drawbacks of using in-house staff or contractors to operate HHW programs.

## 1.2 Survey Topics and Report Overview

In reviewing programs around the nation and developing relevant comparisons with Metro's HHW program, the 2005 HHW program comparison study addressed the following topics:

- **Program demographics and characteristics.** The study obtained information on service area populations, program participants, as well as numbers and types of HHW facilities, mobile collection events, and other HHW services in 2004.
- **Program facilities and services.** The survey collected detailed information about fixed facilities, mobile collection events, door-to-door collection services, and services provided to Conditionally Exempt Generators (CEGs).<sup>2</sup> Figures reported included numbers of facilities and events, operating days, and participation levels in 2004.
- **HHW materials, staff responsibilities, and safety.** The study gathered information on the types of materials that each program collects, including automotive items and latex paint. It also covered how materials are handled, including use of in-house or contractor staff and disposal or recycling of materials. In addition, the survey obtained safety and accident data from HHW programs, including the types of safety programs in place.
- **Program costs.** The survey sought to collect detailed cost information for HHW programs in 2004, including the costs of administration and management, processing and packaging labor, disposal and transportation, supplies, public education and promotion, annual maintenance, and other costs.
- **In-house and contractor-operated programs.** The survey also asked respondents for their opinions on the benefits and drawbacks of HHW programs primarily operated by in-house staff or contractors.

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<sup>2</sup> In the survey, these types of businesses were referred to as Conditionally Exempt Small-quantity Generators (CESQGs). The term Conditionally Exempt Generator (CEG) is typically used in Oregon and is the name used in this report. A definition of CEG appears in section 2.4 on page 18.

## 1.3 Key Findings

This comparative analysis of household hazardous waste (HHW) programs conducted a telephone and electronic survey to obtain 2004 data from 25 leading HHW programs around the United States. Key results of this HHW comparison study include the following summary findings and comparisons with Metro's HHW program.

- **The 25 programs reviewed offered HHW services to a median population of 600,000 residents, or about 241,000 households. Programs served a median of 16,400 customers in 2004, or 7% of estimated households.** In comparison, Metro's service area contains 1.4 million residents and more than 550,000 households. The program served nearly 53,000 customers, or 10% of households, in 2004.
- **HHW collection ranged from about 213,000 pounds to nearly 9 million pounds, with a median level of 1.4 million pounds total and 75 pounds per participant.** Metro collected 78 pounds of HHW per participant, for a total of nearly 4.1 million pounds of waste in 2004.
- **All but one program offered HHW collection at fixed facilities. The median number of fixed facilities is two, operating 250 days per year and serving 79 participants per day.** Metro has two HHW facilities that typically operate 312 days per year and serve 137 customers per day.
- **More than two-thirds of HHW programs (18 of 25) offer mobile collection events, with a median of 17 operation days per year and 161 participants per day.** Metro held mobile events for 60 days and served nearly the same number of daily customers.
- **The typical program accepts 13 of 18 major HHW categories, plus auto wastes and latex paint.** Metro accepts all but one HHW category (electronic waste), including highly hazardous materials such as radioactives and ammunition/explosives – a greater variety of waste types (17) than any other program interviewed.
- **Annual costs among the 25 programs ranged from about \$120,000 to nearly \$5.5 million in 2004. Median costs were \$55 per participant served and \$0.67 per pound of HHW collected.** Metro's program cost nearly \$3.5 million in 2004, for an average of \$66 per participant and \$0.85 per pound.

The report typically presents summary results from the 25 programs reviewed in the form of median values. Medians present a realistic representation of the midpoint of the observed values and are less subject to influence from outlier values than averages (means). In summarizing data from individual programs, the report uses averages for measures such as number of participants per event, pounds of HHW collected per participant, and cost per pound.

## 1.4 Survey Methods

At the start of this project, the team identified a pool of relevant HHW programs to contact for comparison with Metro. We included jurisdictions from the list of programs interviewed during the previous cost comparison study conducted in 1997. In addition, team members identified some new programs to contact, and agency contacts suggested other programs for inclusion. Through these methods, a set of 35 target programs was identified, which included both in-

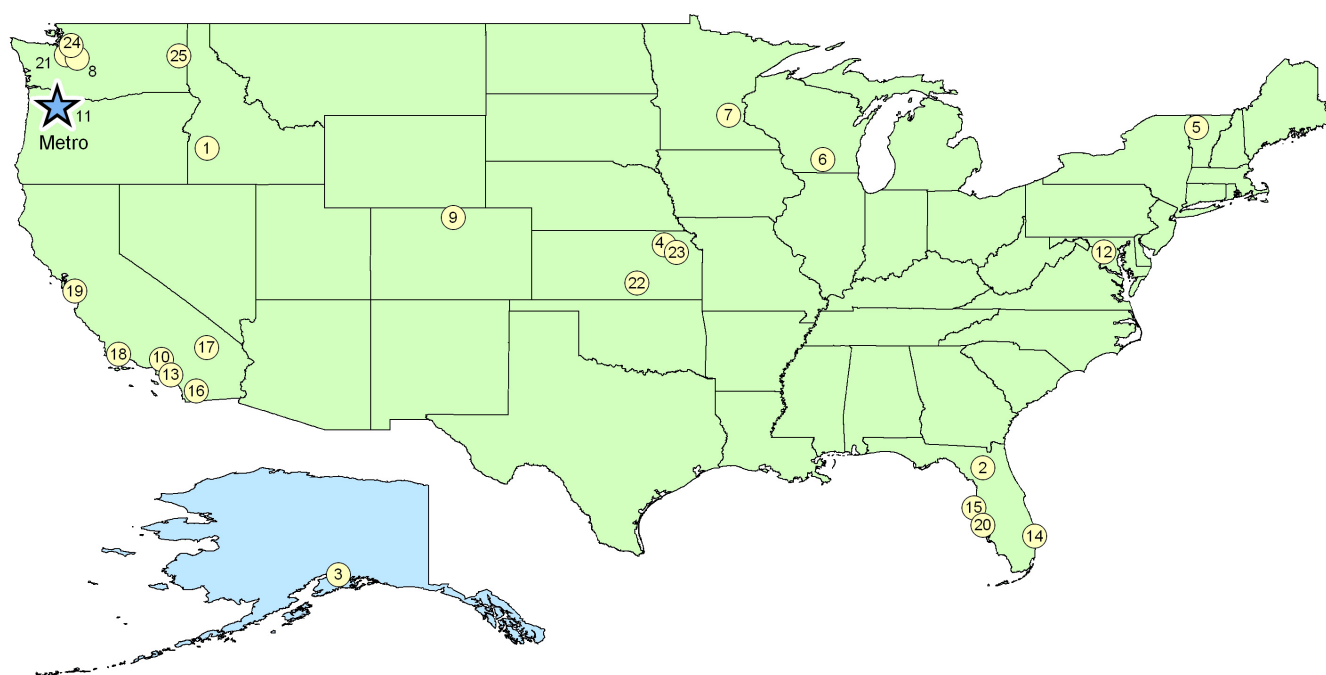
house and contractor-operated programs. We made additional inquiries to obtain the names and contact information for agency program managers as needed.

Prior to fielding the full survey, we conducted a pretest with several programs and revised the survey accordingly. In September, a link to an online survey was sent by electronic mail to the target programs. When the survey was distributed, we made the first round of telephone calls to all 35 members of the survey pool to alert them to the survey and answer any initial questions. We later made follow-up calls to schedule times to review the completed surveys with respondents by phone, followed by reminder calls when the survey deadline was extended to help obtain additional responses. Additional calls were made to address specific questions and in an effort to increase responses, for a total of approximately 150 calls to the target HHW programs. We also provided about 10 copies of the survey questionnaire in alternate formats, such as by fax, upon request. In addition, we sent electronic correspondence to all target programs.

After providing a sufficient response period and conducting thorough follow-up by phone and email, we obtained responses from about 30 HHW programs, or about 85% of the survey pool. We provided an opportunity for these programs to review their compiled responses, compare them with preliminary summary results from the other programs, and provide revisions or explanations as needed. Some of the survey responses included incomplete data on costs or other key sections, however, and were excluded from the study. As a result, the study analyzed data from 25 HHW programs, including Metro.

Figure 2 shows a map of the United States identifying the locations of the 25 HHW programs that were included in the study, and Table 2 lists the names and locations of these HHW programs.

**Figure 2. Map of HHW Programs Included in Comparison Study**



**Table 2. HHW Programs Included in Comparison Study**

	<b>HHW Program</b>	<b>Location</b>
1	Ada County	Idaho (Boise area)
2	Alachua County	Florida
3	Anchorage	Alaska
4	Big Lakes Regional HHW Program	Northeast Kansas (multiple counties)
5	Chittenden Solid Waste District	Vermont
6	Dane County	Wisconsin
7	Hennepin County	Minnesota
8	King County (except Seattle)	Washington
9	Larimer County	Colorado
10	Los Angeles County	Southern California
11	Metro	Oregon (Portland area)
12	Montgomery County	Maryland
13	Orange County	Southern California
14	Palm Beach County	Florida
15	Pinellas County	Florida
16	Regional Solid Waste Association	California (San Diego area)
17	San Bernardino County	Southern California
18	Santa Barbara County	Southern California
19	Santa Clara County	Northern California (Bay Area)
20	Sarasota County	Florida
21	Seattle	Washington
22	Sedgwick County	Kansas
23	Shawnee County	Kansas
24	Snohomish County	Washington
25	Spokane	Washington

## **1.5 Characteristics of Programs Surveyed**

The survey covered a mix of programs, ranging in size from service areas of 150,000 residents to more than 4 million, with a median population of 600,000. Estimated households ranged from 61,000 to 1.3 million, with a median of 241,000 households. Metro covers a service area of about 1.4 million residents, or more than 550,000 households, more than double the median of programs surveyed. Table 3 provides an overview of the programs included in this survey.

The study included both *in-house* programs, which are primarily operated by government employees, as well as *contractor*-operated programs, which are primarily run by private firms that local governments hire to provide HHW services. Only a few programs fit purely in one category. The consultant categorized programs as in-house or contractor-operated based on the portion of the total HHW budget allocated to contractors, the breakdown of costs between

in-house and contractors for particular activities (except disposal and transportation, which are typically contracted out for most programs), and who conducts various program activities, particularly the operation of fixed facilities and mobile collection events. Some programs, such as King County, are hybrid programs in which in-house staff lead certain activities (e.g., fixed facilities) while contractors handle other efforts (e.g., mobile events). In other hybrid programs, in-house staff and contractors share the operation of both fixed facilities and mobile events.

In some cases, our characterization may differ from how a manager would describe his or her program. Ultimately, all of these programs are public in that government agencies typically direct and oversee HHW activities, even in programs that contract out most of their operations. However, we examined the distribution of costs and activities to identify programs in which contractors conduct the majority of the HHW activities. In this classification, the study includes responses from 10 contractor-operated programs and 15 in-house programs, including Metro.

Participation figures ranged from nearly 1,600 to almost 100,000 customers in 2004. Median annual customers totaled 16,400, and participation rates ranged from 2% to 24% of estimated households in the service area. In comparison, Metro served nearly 53,000 customers in 2004, or about 10% of total households, above the median participation rate of 7%. Pounds of HHW collected ranged from over 210,000 pounds in 2004 to nearly 9 million pounds in the largest jurisdiction interviewed (Los Angeles County). Metro collected nearly 4.1 million pounds of HHW, more than all but three programs, two of which serve significantly larger populations. Metro averaged 78 pounds of HHW per participant, above the median of 75 pounds.

The programs interviewed offer different types of HHW collection services to residents and Conditionally Exempt Generators (CEGs), including these four primary types of services:

1. **Fixed facilities** – Permanent facilities dedicated to HHW collection. Typically, residents or eligible businesses deliver HHW to these locations, and staff members sort and consolidate materials on-site for reuse, recycling, or disposal.
2. **Mobile collection events** – Periodic or regularly scheduled collection events in designated areas. These collection events may occur at the same location or at more than one location, depending on the program. Typically, residents or eligible businesses deliver HHW to these locations, and event staff members sort and consolidate materials on-site for reuse, recycling, or disposal.
3. **Door-to-door collection** – Periodic or regularly scheduled collection provided at the resident's home or eligible business location. HHW materials are typically collected and then consolidated at a designated site for reuse, recycling, or disposal.
4. **CEG services** – Collection services provided to Conditionally Exempt Generators. A program may offer CEGs any combination of the services described above (i.e., fixed facilities, mobile collection events, or door-to-door collection).

Table 4 summarizes the types of HHW collection services that each program offers. All but one program provides HHW collection services through fixed facilities: Los Angeles County provides its services entirely through mobile events. Of the programs surveyed, more than two-thirds (18 of 25 programs) offer mobile events, while less than one-third (7 programs) offer door-to-collection opportunities. More than three-quarters (19 programs) make waste collection opportunities available to CEGs. Metro provides HHW services through fixed facilities, mobile events, and CEG services, but it does not offer door-to-door HHW collection.

**Table 3. Overview of HHW Programs Surveyed (2004 data)**

<b>Program</b>	<b>Service Area Population</b>	<b>Estimated Households*</b>	<b>Program Type</b>	<b>Total Participants</b>	<b>% Households Served</b>	<b>Pounds of HHW Materials Collected</b>	<b>Pounds per Participant</b>
Ada County, Boise, ID	350,000	135,000	Contractor	17,100	13%	975,056	57
Alachua County, FL	240,000	103,000	In-house	24,380	24%	1,400,000	57
Anchorage, AK	260,000	90,000	Contractor	16,245	18%	1,036,870	64
Big Lakes Regional HHW Program, KS	184,000	74,000	In-house	4,979	7%	940,327	189
Chittenden Solid Waste District, VT	150,000	61,000	In-house	10,371	17%	560,354	54
Dane County, WI	400,000	169,000	In-house	8,621	5%	470,228	55
Hennepin County, MN	1,139,837	477,000	Contractor	99,596	21%	7,438,076	75
King County (except Seattle), WA	1,173,626	491,000	Contractor	30,385	6%	2,680,000	88
Larimer County, CO	283,000	112,000	In-house	16,319	15%	1,854,547	114
Los Angeles County, CA	4,000,000	1,342,000	Contractor	62,800	5%	8,900,000	142
Montgomery County, MD	1,000,000	376,000	Contractor	11,530	3%	810,000	70
Orange County, CA	3,056,865	1,013,842	Contractor	90,100	9%	6,315,618	70
Palm Beach County, FL	1,300,000	556,000	In-house	68,160	12%	1,481,514	22
Pinellas County, FL	1,000,000	350,000	In-house	15,737	4%	1,085,252	69
Regional Solid Waste Association, CA	720,000	264,000	Contractor	10,841	4%	836,976	77
San Bernardino County, CA	1,786,187	567,000	In-house	36,720	6%	3,046,360	83
Santa Barbara County, CA	312,700	112,000	Contractor	10,665	10%	660,094	62
Santa Clara County, CA	1,600,700	594,000	Contractor	23,861	4%	2,163,874	91
Sarasota County, FL	340,000	160,000	In-house	9,523	6%	1,509,219	158
Seattle, WA	600,000	288,000	In-house	16,400	6%	1,050,000	64
Sedgwick County, KS	500,000	198,000	In-house	14,413	7%	1,148,788	80
Shawnee County, KS	171,000	72,000	In-house	1,589	2%	212,763	134
Snohomish County, WA	638,000	241,000	In-house	16,483	7%	2,199,914	133
Spokane, WA	480,000	195,000	In-house	34,632	18%	1,804,000	52
<b>Metro</b>	<b>1,400,000</b>	<b>553,000</b>	<b>In-house</b>	<b>52,813</b>	<b>10%</b>	<b>4,095,798</b>	<b>78</b>
<b>Range</b>	<b>150,000 - 4,000,000</b>	<b>61,000 - 1,342,000</b>	<b>-</b>	<b>1,589 - 99,596</b>	<b>2% - 24%</b>	<b>212,763 - 8,900,000</b>	<b>22 - 189</b>
<b>Median</b>	<b>600,000</b>	<b>241,000</b>	<b>-</b>	<b>16,400</b>	<b>7%</b>	<b>1,400,000</b>	<b>75</b>

\* For programs that did not provide household figures, the number of households was estimated from service area populations (provided by respondents) divided by average household sizes for the city or county obtained from 2000 U.S. Census data.

**Table 4. HHW Collection Services, by Program**

<b>Program</b>	<b>Fixed Facilities</b>	<b>Mobile Events</b>	<b>Door-to-door Collection</b>	<b>CEG Services</b>
Ada County, Boise, ID	✓	✓		✓
Alachua County, FL	✓	✓		✓
Anchorage, AK	✓		✓	✓
Big Lakes Regional HHW Program, KS	✓	✓		✓
Chittenden Solid Waste District, VT	✓	✓		✓
Dane County, WI*	✓	✓		✓
Hennepin County, MN	✓	✓		
King County (except Seattle), WA	✓	✓		
Larimer County, CO	✓	✓		✓
Los Angeles County, CA		✓		
Metro, Portland, OR	✓	✓		✓
Montgomery County, MD	✓	✓		✓
Orange County, CA	✓			
Palm Beach County, FL	✓			✓
Pinellas County, FL	✓	✓		✓
Regional Solid Waste Association, CA*	✓	✓	✓	✓
San Bernardino County, CA	✓		✓	✓
Santa Barbara County, CA	✓	✓	✓	✓
Santa Clara County, CA	✓	✓	✓	✓
Sarasota County, FL <sup>†</sup>	✓	✓	✓	✓
Seattle, WA	✓			
Sedgwick County, KS	✓	✓		✓
Shawnee County, KS	✓			
Snohomish County, WA*	✓	✓		✓
Spokane, WA	✓		✓	✓
<b>Number of Programs (of 25)</b>	<b>24</b>	<b>18</b>	<b>7</b>	<b>19</b>

\* *Dane County, RSWA, and Snohomish County reported that they typically offer mobile events, but these programs did not host any such events in 2004.*

<sup>†</sup> *Sarasota County began its mobile collection events in 2005.*

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## 2 Program Facilities and Services

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This chapter describes the facilities and services that the 25 HHW programs surveyed offer, including fixed facilities, mobile collection events, door-to-door collection services, and services for Conditionally Exempt Generators.

### 2.1 Fixed Facilities

**Fixed facilities** are permanent sites dedicated to HHW collection. Typically, residents or eligible businesses deliver HHW to these locations, and staff members sort and consolidate materials on-site for reuse, recycling, or disposal. All but one of the 25 programs covered in this study provides HHW services through fixed facilities. Programs with a single facility are the most common. One program has 22 facilities, but most are open only one to two days a week or less frequently. The median number of fixed facilities is two, which is what Metro offers for HHW dropoff: Metro Central Station in Portland and Metro South Station in Oregon City.

Days of operation among the programs vary greatly, and Metro provides more days of service than all but two programs. One program provides only 10 days of service, while another is open seven days a week except for major holidays, for a total of 359 days a year. Open six days a week, Metro offers 312 days of service at each of its two facilities, well above the median of 250 days per year. Metro serves an average of 137 participants per day, more than 70% above the median of 79 participants per day. The program with the highest number of participants per day has the fewest days of service, only 10 days per year. Table 5 shows how many fixed facilities and days of service that each HHW program provides as well as the average number of participants served per day.

**Table 5. Summary of Fixed HHW Collection Facilities, by Program**

Program	Fixed Facilities		
	Number of Fixed Facilities	Operation Days per Year	Average Daily Participants
Ada County, Boise, ID	1	104	94
Alachua County, FL	6	306	75
Anchorage, AK	3	234	65
Big Lakes Regional HHW Program, KS	10	250	20
Chittenden Solid Waste District, VT	1	256	23
Dane County, WI	1	105	81
Hennepin County, MN	2	260	359
King County (except Seattle), WA	1	208	64
Larimer County, CO	1	208	77
Los Angeles County, CA	<i>no fixed facilities</i>		
Montgomery County, MD	1	10	800
Orange County, CA	4	250	360
Palm Beach County, FL	6	321	212
Pinellas County, FL	1	208	47
Regional Solid Waste Association, CA	2	45	225
San Bernardino County, CA	22	304	120
Santa Barbara County, CA	1	147	65
Santa Clara, CA	3	64	309
Sarasota County, FL	2	260	31
Seattle, WA	2	305	54
Sedgwick County, KS	1	255	53
Shawnee County, KS	1	260	6
Snohomish County, WA	1	189	85
Spokane, WA	3	359	95
<b>Metro</b>	<b>2</b>	<b>312</b>	<b>137</b>
<b>Range</b>	<b>1 - 22</b>	<b>10 - 359</b>	<b>6 - 800</b>
<b>Median</b>	<b>2</b>	<b>250</b>	<b>79</b>

## 2.2 Mobile Collection Events

**Mobile collection events** are periodic or regularly scheduled opportunities for HHW collection in designated areas that are not fixed HHW facilities. These collection events may occur at the same location or at more than one location, depending on the program. Typically, residents or eligible businesses deliver HHW to these locations, and event staff members sort and consolidate materials on-site for reuse, recycling, or disposal.

Of the 25 programs reviewed, 18 programs (72%) typically offer mobile collection events, though the number of events offered varies greatly. Table 6 summarizes mobile collection events by HHW program. The minimum number of mobile events was zero, for three programs that typically offer mobile collection but did not host any events in 2004. (A fourth program had no events in 2004, but it initiated mobile events in 2005 and provided data for that year.) The program with the highest number held 115 mobile events, including some events sponsored in conjunction with neighboring jurisdictions. The program with the largest service area population provides all of its HHW service through mobile events and does not offer any fixed facilities, door-to-door service, or CEG services. Metro provided 35 mobile collection events in 2004, more than double the median of 17 among the programs surveyed.

The large majority of mobile events are single-day events, though several jurisdictions offer multi-day mobile collection events. Metro's 35 mobile events provided 60 days of service in 2004, for an average length of 1.7 days per event, longer than all but one program surveyed. The average number of participants per day at mobile events ranges from just over 60 to well over 1,000, for the program with the largest population that provides all its HHW service through mobile events. Metro averages about 159 participants per day at its mobile events, which is similar to the median level (161 participants per day) for programs offering mobile events.

**Table 6. Summary of Mobile HHW Collection Events, by Program**

Program	Mobile Collection Events		
	Number of Mobile Events	Average Days per Event	Average Daily Participants
Ada County, Boise, ID	115	1	62
Alachua County, FL	12	1	70
Anchorage, AK	<i>no mobile events</i>		
Big Lakes Regional HHW Program, KS	25	1	N/A
Chittenden Solid Waste District, VT	39	1.4	76
Dane County, WI	0	0	-
Hennepin County, MN	19	1.5	218
King County (except Seattle), WA	27	3.4	185
Larimer County, CO	1	1	100
Los Angeles County, CA*	57	1	1,102
Montgomery County, MD	21	1	162
Orange County, CA	<i>no mobile events</i>		
Palm Beach County, FL	<i>no mobile events</i>		
Pinellas County, FL	20	1	290
Regional Solid Waste Association, CA	0	0	-
San Bernardino County, CA	<i>no mobile events</i>		
Santa Barbara County, CA	3	1	174
Santa Clara, CA	6	1	642
Sarasota County, FL <sup>†</sup>	14	1	72
Seattle, WA	<i>no mobile events</i>		
Sedgwick County, KS	5	1	138
Shawnee County, KS	<i>no mobile events</i>		
Snohomish County, WA	0	0	-
Spokane, WA	<i>no mobile events</i>		
<b>Metro</b>	<b>35</b>	<b>1.7</b>	<b>159</b>
<b>Range</b>	<b>0 - 115</b>	<b>0 - 3.4</b>	<b>62 - 1,102</b>
<b>Median</b>	<b>17</b>	<b>1.0</b>	<b>161</b>

\* Los Angeles County is the only program that provides HHW service exclusively through mobile events.

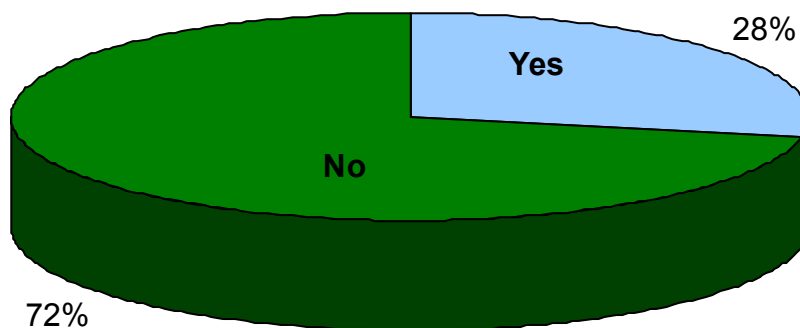
<sup>†</sup> Sarasota County began its mobile collection events in 2005.

## 2.3 Door-to-door Collection Service

**Door-to-door collection** includes periodic or regularly scheduled collection provided at the resident's home or eligible business location. HHW materials are typically collected and then consolidated at a designated site for reuse, recycling, or disposal. As shown in Figure 3, just over one-quarter of the programs (7 of 25) surveyed offer door-to-door collection service. Only five programs reported participation figures for their door-to-door collection efforts, and figures ranged from 10 to 717 customers per year, with a median of 34. Days of door-to-door operation varied from one to 312 days per year among the five programs that reported service levels.

Metro does not offer door-to-door collection service, but it does provide multiple collection opportunities and serve a large number of customers through its two fixed facilities, mobile events, and CEG services.

**Figure 3. HHW Programs Surveyed with Door-to-door Collection Service**

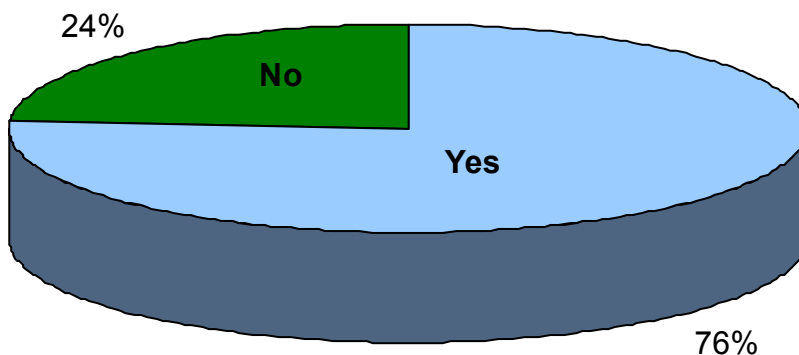


## 2.4 CEG Services

**CEG services** are hazardous material collection services provided to Conditionally Exempt Generators (CEGs). To qualify as a CEG, a business must produce less than 220 pounds of hazardous waste and less than 2.2 pounds of acutely hazardous waste each month. A CEG can accumulate no more than 2,200 pounds of hazardous waste at its site. Typical CEGs include small businesses like print shops, dry cleaners, repair shops, furniture refinishers, metal fabricators, vehicle maintenance shops, laboratories, and construction contractors.

A program may offer any combination of the services described previously to CEGs – that is, fixed facilities, mobile collection events, and door-to-door collection. As shown in Figure 4, about three-quarters of the programs reviewed (19 of 25) offer service to CEGs, including Metro. Most programs provide service to CEGs via their fixed HHW facilities, though three programs also provide door-to-door collection to CEGs and several offer additional types of CEG service. CEG participation ranges from 17 to 1,000 per year, depending on the program. Metro served 484 CEGs at its fixed facilities in 2004, more than all but two programs and more than double the median of 211 CEGs served.

**Figure 4. HHW Programs that Offer Service to CEGs**



## 3 HHW Materials and Safety

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### 3.1 Materials Accepted

#### **Eighteen Primary HHW Categories**

The 25 HHW programs reviewed in this study accept a diverse array of HHW materials. The survey asked programs which materials they accept from a list of 18 categories of HHW: acids, bases, and oxidizers; aerosols; ammunition and other explosives; asbestos; household batteries; compressed gases other than propane in thick-walled cylinders; electronic waste; fluorescent tubes; medications and pharmaceuticals; mercury-containing products; oil-based paints; PCB-containing items; pesticides and poisons; propane cylinders; radioactive materials; reactives and organic peroxides; sharps; and solvents and other flammables. The median number of HHW categories that programs collect is 13 of the 18 classes. Table 7 shows which of the 18 HHW material categories that each of the programs interviewed accepts for disposal.

Metro accepts more categories of HHW (17) than any other program interviewed. No program accepts all 18 materials, but Metro accepts everything except electronic waste. For the most hazardous materials, only one program besides Metro accepts radioactive materials; six accept ammunition and explosives; and eight accept asbestos. Metro accepts several categories of particularly high-hazard materials – such as radioactive materials, ammunition, and asbestos – that other programs do not accept. Four programs accept 16 of the 18 HHW categories, but none of these programs accepts radioactive materials, nor do they accept both ammunition and asbestos. Only one program besides Metro accepts radioactive materials, but that program accepts four fewer HHW categories than Metro and does not accept ammunition or asbestos.

#### **Automotive Materials and Latex Paint**

Five additional categories, including latex paint and four types of automotive materials, were examined separately, for a total of 23 HHW classes. All 25 programs accept latex paint in their HHW collection. Table 8 shows which programs collect the four categories of automotive HHW materials: antifreeze, lead-acid batteries, oil filters, and motor oil. It also shows the estimated portion that auto-related wastes represent of each program's total pounds of HHW collection.

**Automotive Materials.** All but three of the 25 programs reviewed accept all four categories of automotive waste, either through their regular HHW collection channels or through dedicated collection sites. One program does not accept any auto wastes, and one program only accepts antifreeze; a third program accepts all automotive categories except oil filters. Auto-related waste represents between 0% and 71% of total HHW collected by each program. Because auto waste is less costly to manage than many other HHW categories, a high portion of auto waste can translate into relatively lower total program costs. Auto wastes represent only 10% of Metro's total HHW collected. Among the 23 programs that accept all four auto waste categories, only three programs handle a smaller percentage of auto-related waste than Metro. This relatively low portion of auto waste collected affects Metro's resulting program costs.

**Latex Paint.** Table 9 shows how the 25 programs handle the latex paint that they collect, including whether the activity is conducted by in-house staff or contractors. The table also shows the estimated percentage that latex paint represents of each program's total HHW pounds collected. The amount of latex paint collected ranges from 4% to 65% of total HHW. Metro's in-house staff recycles its latex back into paint for resale. Latex paint represents about 39% of the HHW pounds that Metro collects, above the program median of 24%.

**Table 7. Overview of Materials Accepted**

Program	Number (of 18)	Acids/Bases/Oxidizers	Aerosols	Ammunition	Asbestos	HH Batteries	Non-propane Compr. Gas	E-waste	Fluorescent Tubes	Meds/Pharm	Mercury Products	Oil-based Paints	PCB Items	Pesticides/ Poisons	Propane Cylinders	Radioactives	Reactive/Org. Peroxides	Sharps	Solvents/ Flammables
Ada County, Boise, ID	16	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Alachua County, FL	16	✓	✓*	✓		✓*	✓	✓*	✓*	✓*	✓	✓*	✓	✓	✓*		✓	✓	✓*
Anchorage, AK	12	✓	✓			✓	✓	✓			✓	✓	✓	✓		✓			✓
Big Lakes Regional HHW Program, KS	12	✓	✓		*	✓		✓			✓	✓	✓	✓		✓			✓
Chittenden Solid Waste District, VT	13	✓	✓			✓*	✓	*	✓*		✓*	✓	✓	✓	✓*		✓		✓
Dane County, WI	10	✓	✓				✓				✓	✓	✓	✓	✓		✓		✓
Hennepin County, MN	12	✓	✓			✓		✓	✓		✓	✓	✓	✓	✓		✓		✓
King County (except Seattle), WA	13	✓	✓				✓	*	✓		✓	✓	✓	✓	✓	✓			✓
Larimer County, CO	15	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓		✓
Los Angeles County, CA	16	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Metro, Portland, OR	17	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Montgomery County, MD	11	✓	✓					*	✓	*	✓	✓		✓	✓*		✓		✓
Orange County, CA	13	✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓		✓		✓
Palm Beach County, FL	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓
Pinellas County, FL	13	✓	✓		✓	✓		✓	✓		✓	✓	✓	✓	✓		✓		✓
Regional Solid Waste Association, CA	14	✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
San Bernardino County, CA	14	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓			✓	✓	✓
Santa Barbara County, CA	14	✓*	✓*		✓*	✓*		*	✓*	✓	✓*	✓*	✓	✓*	✓*		✓*		✓*
Santa Clara, CA	15	✓	✓		✓	✓	✓		✓	✓*	✓	✓	✓	✓	✓		✓	✓	✓
Sarasota County, FL	14	✓	✓	*		✓*		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓
Seattle, WA	11	✓	✓			✓			✓		✓	✓	✓	✓	✓		✓		✓
Sedgwick County, KS	14	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓
Shawnee County, KS	9	✓	✓			✓					✓	✓	✓	✓			✓		✓
Snohomish County, WA	11	✓	✓			✓*		✓*		✓	✓	✓	✓	✓	✓*		✓		✓
Spokane, WA	13	✓	✓	✓		✓	✓				✓	✓	✓	✓	✓		✓	✓	✓
<b>Number of Programs (of 25)</b>	<b>13</b>	<b>25</b>	<b>25</b>	<b>7</b>	<b>9</b>	<b>22</b>	<b>14</b>	<b>17</b>	<b>19</b>	<b>13</b>	<b>25</b>	<b>25</b>	<b>24</b>	<b>25</b>	<b>23</b>	<b>2</b>	<b>25</b>	<b>9</b>	<b>25</b>

\* An asterisk denotes programs that have a dedicated collection facility for the designated material; some programs have only dedicated facilities for particular materials, while others offer collection through regular fixed and/or mobile facilities as well as special dedicated sites.



**Table 8. Overview of Auto-Related Waste, Handling and Quantity**

<b>Program</b>	<b>Antifreeze</b>	<b>Lead-acid Batteries</b>	<b>Oil Filters</b>	<b>Motor Oil</b>	<b>Auto Wastes, % of HHW</b>
Ada County, Boise, ID	✓	✓	✓	✓	35%
Alachua County, FL	✓*	✓*	✓*	✓*	25%
Anchorage, AK	✓	✓	✓	✓	46%
Big Lakes Regional HHW Program, KS	✓	✓	✓	✓	71%
Chittenden Solid Waste District, VT	✓	✓	✓	✓	37%
Dane County, WI					0%
Hennepin County, MN	✓	✓	✓	✓	13%
King County (except Seattle), WA	✓	✓	✓	✓*	18%
Larimer County, CO	✓	✓		✓	22%
Los Angeles County, CA	✓	✓	✓	✓	11%
Metro, Portland, OR	✓	✓	✓	✓	10%
Montgomery County, MD	*	*	*	*	15%
Orange County, CA	✓	✓	✓	✓	15%
Palm Beach County, FL	✓	✓	✓	✓	38%
Pinellas County, FL	✓				6%
Regional Solid Waste Association, CA	✓	✓	✓	✓	12%
San Bernardino County, CA	✓	✓	✓	✓	39%
Santa Barbara County, CA	✓	✓	✓	✓	19%
Santa Clara County, CA	✓	✓	✓	✓	8%
Sarasota County, FL	✓	✓	✓	✓	19%
Seattle, WA	✓	✓	✓	*	~1%
Sedgwick County, KS	✓	✓	✓	✓	29%
Shawnee County, KS	✓	✓	✓	✓	31%
Snohomish County, WA	✓	✓	✓	✓	4%
Spokane, WA	✓	✓	✓	✓	49%
<b>Number of Programs (of 25)</b>	<b>24</b>	<b>23</b>	<b>22</b>	<b>23</b>	<b>19%</b>

\* An asterisk denotes programs that have a dedicated collection facility for the designated material; some programs have only dedicated facilities for particular materials, while others offer collection through regular fixed and/or mobile facilities as well as special dedicated sites.

**Table 9. Overview of Latex Paint, Handling and Quantity**

<b>Program</b>	<b>Give Away in Original Container</b>	<b>Consolidate &amp; Recycle</b>	<b>Solidify for Landfill</b>	<b>Recycle into Paint</b>	<b>Other Beneficial Reuse</b>	<b>Latex Paint, % of HHW</b>
Ada County, Boise, ID	IH	IH		IH	IH	18%
Alachua County, FL	IH	IH		IH		20%
Anchorage, AK	C		C			19%
Big Lakes Regional HHW Program, KS	IH	IH		IH		10%
Chittenden Solid Waste District, VT		IH	IH	IH		46%
Dane County, WI	IH			IH	IH	59%
Hennepin County, MN				C	C	16%
King County (except Seattle), WA				C	C	32%
Larimer County, CO	IH		C			4%
Los Angeles County, CA		C		C	C	13%
Metro, Portland, OR				IH		39%
Montgomery County, MD	C		C			65%
Orange County, CA	C	C		C	C	20%
Palm Beach County, FL	IH	C	IH	C		45%
Pinellas County, FL	IH		IH			37%
Regional Solid Waste Association, CA		C		C	C	31%
San Bernardino County, CA	IH	IH		IH	C	16%
Santa Barbara County, CA		C		C		24%
Santa Clara, CA	IH	IH/C		C		30%
Sarasota County, FL	IH		C	C		11%
Seattle, WA		IH			C	45%
Sedgwick County, KS	IH/C	IH/C		IH/C		10%
Shawnee County, KS	IH	IH		IH		23%
Snohomish County, WA				IH		28%
Spokane, WA	IH				IH	30%
<b>Number of Programs (of 25)</b>	<b>16</b>	<b>14</b>	<b>7</b>	<b>19</b>	<b>10</b>	<b>24%</b>

*IH = In-house operated; C = Contractor operated; IH/C = Both In-house and Contractor operated*

## 3.2 Material Handling

HHW programs involve a range of responsibilities for proper waste management. The survey covered 15 major waste handling activities of HHW programs: materials processing, materials unloading, segregation, packaging and labeling, labpacking, bulking, manifesting, transportation, education, testing, facility maintenance, CEG services, load checks, clean-up, and emergency response. For these activities, Table 10 shows whether each program conducts that effort using in-house staff, contractors, or both. Figure 5 provides a graphical summary of this information for all 25 programs.

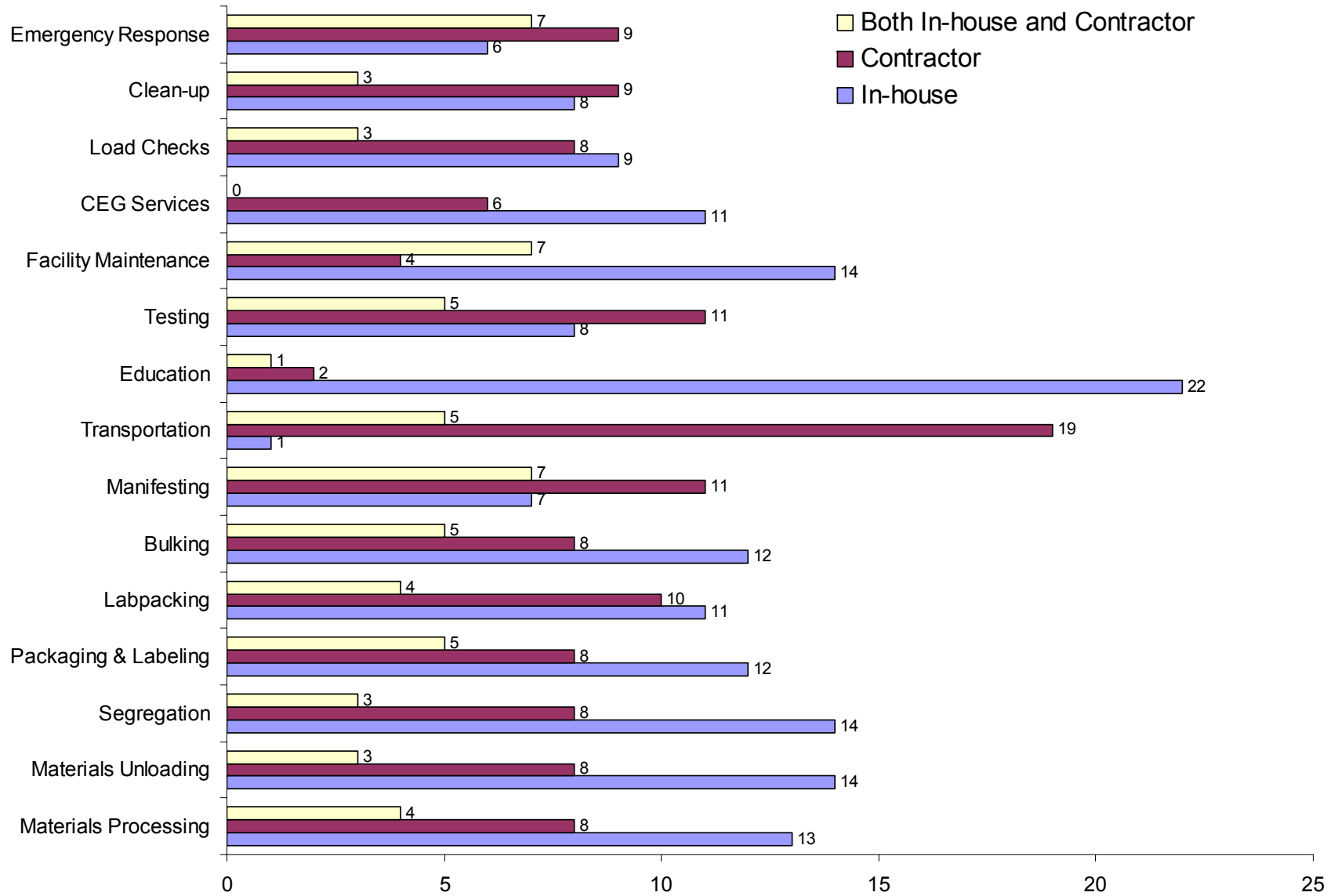
As expected, whether in-house staff or contractors conduct various waste management activities relates to whether the overall program is primarily operated by in-house staff or contractors. However, even among primarily in-house programs, some activities, such as transportation and testing, were more commonly conducted by contractors. All but one program contracted out at least some of its waste transportation. Among largely contractor-operated programs, education, facility maintenance, and load checks were more commonly conducted by in-house staff than contractors. Facility maintenance and emergency response were the categories with the largest number of programs reporting that both in-house staff and contractors conducted the activity.

**Table 10. Overview of HHW Handling Responsibilities**

Program	Materials Processing	Materials Unloading	Segregation	Packaging & Labeling	Labpacking	Bulking	Manifesting	Transportation	Education	Testing	Facility Maintenance	CEG Services	Load Checks	Clean-up	Emergency Response
Ada County, Boise, ID	C	C	C	C	C	C	C	C	IH	C	IH	C	IH	C	C
Alachua County, FL	C	C	C	C	C	C	C	C	IH/C	C	IH/C	C	IH/C		
Anchorage, AK	C	C	C	C	C	C	C	C	IH/C	C	IH/C	C	IH/C		C
Big Lakes Regional HHW Program, KS	C	C	C	C	C	C	IH/C	C	IH	C	IH		C	IH/C	C
Chittenden Solid Waste District, VT	C	C	C	C	C	C	C	C	IH	C	C				
Dane County, WI	C	C	C	C	C	C	C	C	IH	C	IH		IH/C		C
Hennepin County, MN	C	C	C	C	C	C	C	C	IH	C	C	C	C	C	C
King County, WA (except Seattle)	IH/C	IH/C	IH/C	IH/C	C	IH/C	C	C	C	C	IH/C		IH/C	C	IH/C
Larimer County, CO	IH	IH	IH	IH	IH	IH	C	C	IH	IH	IH	IH	IH	IH	IH
Los Angeles County, CA	IH	IH	IH	IH	IH	IH	C	C	IH	IH/C	IH	IH	C	IH/C	IH/C
Metro, Portland, OR	IH	IH	IH	IH	IH	IH	IH/C	IH/C	IH	IH/C	IH/C	IH	IH	IH	IH/C
Montgomery County, MD	IH	IH	IH	IH	IH	IH	IH/C	C	IH	IH/C	IH	IH	IH	C	C
Orange County, CA	C	C	C	C	C	C	C	C	IH	C	IH		IH/C		C
Palm Beach County, FL	IH	IH	IH	IH	IH	IH	IH	IH	IH	IH	IH/C	IH	IH	C	IH/C
Pinellas County, FL	IH	IH	IH	IH/C	C	IH/C	C	C	IH/C	C	IH	C	IH	C	IH
Regional Solid Waste Association, CA	IH	IH	IH	IH	IH	IH	IH	C	IH	IH	IH				IH/C
San Bernardino County, CA	IH	IH	IH	IH	IH	IH	IH	C	IH	IH	IH				IH/C
Santa Barbara County, CA	IH	IH	IH	IH	IH	IH	IH	IH/C	IH	IH	IH		IH	IH/C	IH/C
Santa Clara, CA	IH/C	IH/C	IH/C	IH/C	IH/C	IH/C	IH/C	IH/C	IH	IH/C	IH/C	IH			
Sarasota County, FL	IH	IH	IH	IH	IH	IH	IH	C	IH	IH	IH/C			IH	C
Seattle, WA	IH	IH	IH	IH	IH	IH	IH	C	IH	IH	IH	C	IH	IH	IH
Sedgwick County, KS	IH/C	IH	IH	IH	IH/C	IH/C	IH/C	C	IH	IH/C	IH	IH	C	C	IH/C
Shawnee County, KS	IH/C	IH/C	IH/C	IH/C	C	IH/C	C	C	C	C	IH/C		IH/C	C	C
Snohomish County, WA	IH	IH	IH	IH	IH	IH	IH	C	IH	IH	IH	IH		IH	IH
Spokane, WA	IH/C	IH/C	IH/C	IH/C	IH/C	IH/C	IH/C	IH/C	IH	C	IH/C	IH	C	IH	IH/C
<b>Number of Programs (of 25)</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>15</b>	<b>19</b>	<b>17</b>	<b>22</b>
In-house	12	13	13	12	11	11	7	1	20	8	14	9	8	6	4
Contractor	8	8	8	8	11	8	12	20	2	12	2	6	5	8	9
Both	5	4	4	5	3	6	6	4	3	5	9	0	6	3	9

IH = in-house operated; C = contractor operated; IH/C = both in-house and contractor operated

**Figure 5. HHW Handling Responsibilities, In-house or Contractor**

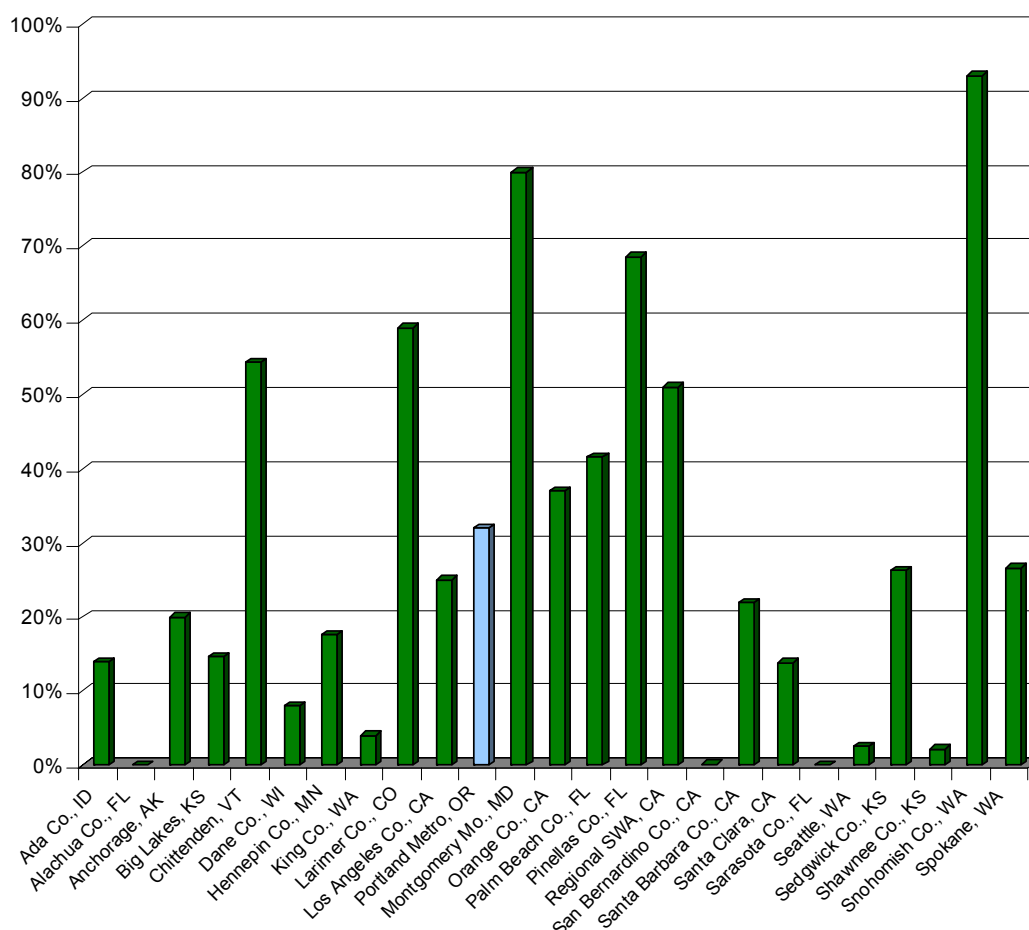


### 3.3 Material Disposition

Most HHW programs not only promote the proper handling and management of HHW materials, but they also often seek to recycle materials where possible. Some programs include “swap shop” efforts where residents can obtain certain materials, such as pool chemicals or pesticides that are not banned, which others have brought in for disposal. The goal of these efforts is to prevent additional purchases and generation of HHW among those who want or need to use particular hazardous materials. Many other HHW materials can be sorted and recycled through HHW collection programs. Some materials, however, such as banned pesticides, are not easily recycled. As a result, HHW programs often need to incinerate or landfill at least a portion of the materials they collect.

This study sought to evaluate HHW recovery rates by identifying the amount of material landfilled and incinerated. Unfortunately, record-keeping on pounds collected by type and ultimate disposition of materials varied considerably across programs. Calculated and reported rates of HHW disposal ranged from 0.13% to 93%, as shown in Figure 6. The consultants believe that different tracking methods across programs and incomplete reporting of weights may contribute to this wide variance in results. Despite follow-up queries to all programs, we were unable to validate all of these figures. In 2004, Metro landfilled or incinerated approximately 32% of the HHW pounds it collected, somewhat higher than the median level of 26% reported among the HHW programs reviewed. A higher proportion of difficult-to-recycle materials, like pesticides and asbestos, may contribute to Metro’s disposal levels.

**Figure 6. Estimated Percentage of Wastes Landfilled or Incinerated**



### 3.4 Safety

HHW programs typically incorporate various safety measures intended to protect the health and safety of their workers as well as program participants. Of five types of safety programs assessed, safety meetings are the most common measure used among the HHW programs surveyed, with all but one program reporting such meetings. Safety committees involve meetings but are a more involved effort than meetings alone; committees were the least reported safety activity, with only 11 of 25 programs reporting they used safety committees. The programs interviewed typically described their in-house monitoring programs as including such activities as regular inspections, industrial hygiene, and air-flow monitoring. Table 11 shows the type of safety activities that each HHW program undertakes as well as its reported number of injuries or accidents.

Metro uses four of the five types of safety programs reviewed, but it does not have an in-house monitoring component. Metro reported a higher number of injuries or accidents than other programs, but it also has the largest number of in-house full-time equivalent employees (FTEs). Injuries per FTE ranged from zero to 1.0 in 2004 among programs surveyed. Metro reported 0.3 injuries per FTE. This figure is above the program average of 0.1, but below the average of

0.4 among the eight programs that reported injuries. Median injuries and injuries per FTE across the 25 programs were zero. Accidents or injuries may have been underreported among programs surveyed, however, due to differences in tracking and reporting as well as use of contractor staff. Injuries among contractors may not be reported to or tracked in detail by the public agencies overseeing the HHW program contracts.

**Table 11. Safety Activities and Injury Records among HHW Programs**

<b>Program</b>	<b>Reported Injuries/ Accidents</b>	<b>Injuries per FTE</b>	<b>In-house Monitoring</b>	<b>Medical Monitoring</b>	<b>Safety Cmtes.</b>	<b>Safety Mtgs.</b>	<b>PPE</b>
Ada County, ID	0	0	✓	✓		✓	✓
Alachua County, FL	0	0		✓	✓	✓	✓
Anchorage, AK	0	0	✓	✓		✓	✓
Big Lakes Regl. HHW Pgm., KS	0	0	✓			✓	
Chittenden Solid Waste Dist., VT	1	0.3		✓		✓	✓
Dane County, WI	0	0	✓	✓		✓	✓
Hennepin County, MN	0	0	✓	✓		✓	✓
King County (except Seattle), WA	3	0.8	✓		✓	✓	✓
Larimer County, CO	0	0	✓	✓		✓	✓
Los Angeles County, CA	0	0	✓	✓		✓	✓
Metro, Portland, OR	10	0.3		✓	✓	✓	✓
Montgomery County, MD	0	0				✓	✓
Orange County, CA	0	0	✓	✓		✓	✓
Palm Beach County, FL	0	0		✓		✓	✓
Pinellas County, FL	0	0	✓	✓	✓	✓	✓
Regional Solid Waste Assoc., CA	1	N/A				✓	
San Bernardino County, CA	2	0.1	✓	✓	✓	✓	✓
Santa Barbara County, CA	0	0	✓			✓	✓
Santa Clara County, CA	2	0.2		✓	✓	✓	✓
Sarasota County, FL	0	0	✓	✓	✓	✓	✓
Seattle, WA	0	0		✓	✓	✓	
Sedgwick County, KS	1	0.2	✓		✓	✓	✓
Shawnee County, KS	0	0	✓	✓			✓
Snohomish County, WA	5	1.0	✓	✓	✓	✓	✓
Spokane, WA	0	0	✓	✓	✓	✓	✓
<b>Number of Programs (of 25)</b>	<b>8</b>	<b>7</b>	<b>17</b>	<b>19</b>	<b>11</b>	<b>24</b>	<b>22</b>
<b>Range</b>	<b>0 - 10</b>	<b>0 - 1.0</b>					
<b>Average</b>	<b>1</b>	<b>0.1</b>					



## **4 Program Costs**

---

### **4.1 Total HHW Program Costs**

Total costs of household hazardous waste programs in 2004 surveyed range from about \$120,000 to nearly \$5.5 million. Program costs correlate closely with participants served. For example, the program with the lowest total costs served the fewest customers, and the program with the highest costs served the largest number of participants. Pounds per participant, types and amounts of HHW materials collected, days of operation, services provided, and other factors all affect program costs. Table 12 shows total program costs, average cost per pound of HHW collected, and average cost per participant for each of the 25 HHW programs reviewed.

Metro's HHW program cost nearly \$3.5 million in 2004. Only three programs had higher total costs than Metro, and they are the only three programs that collected more pounds of HHW than Metro. In comparison with the other HHW programs reviewed, Metro generally provides a high level of convenient, comprehensive services, with more HHW types accepted and more combined operation days of fixed facilities and mobile collection events than other programs.

### **4.2 Cost per Pound of HHW Collected**

Average costs of HHW collected range from 21 cents to just over \$2 per pound; the median among programs surveyed is 67 cents per pound. Cost per pound is not a straightforward measure of efficiency, however, as the type and level of service provided has a profound impact on cost. For example, the program with the lowest per-pound cost reports the largest fraction of auto-related HHW waste (71%), which typically costs less to manage than most other categories of HHW. The program with the highest calculated per-pound cost could not quantify all of its auto-related waste, so its waste totals are underreported, which makes the per-pound cost artificially high. Metro's costs average 85 cents per pound of HHW collected. Programs with lower per-pound costs than Metro offer collection for fewer HHW categories, handle a higher percentage of auto-related waste, or both.

Costs per pound of HHW collected were calculated from the costs and pounds of HHW that programs reported. Due to differences in tracking and reporting methods across programs, the calculated costs presented here may vary from the cost measures that individual programs develop for themselves. These calculated values represent an effort to use comparable data across programs, though incomplete or inconsistent reporting of costs and quantities may affect the results.

### **4.3 Cost per Participant in HHW Programs**

Average cost per program participant ranges from \$8 to \$129, with a median cost of \$55. Metro's HHW program costs an average of about \$66 per customer, which places it nearly in the middle of the programs surveyed: 11 programs have costs per participant that are the same or higher than Metro's, and 13 have lower per-participant costs. Programs with lower per-customer costs than Metro offer collection for fewer HHW categories, handle a higher percentage of auto-related waste, or both.

**Table 12. HHW Program Costs, Total and by Pound and Participant**

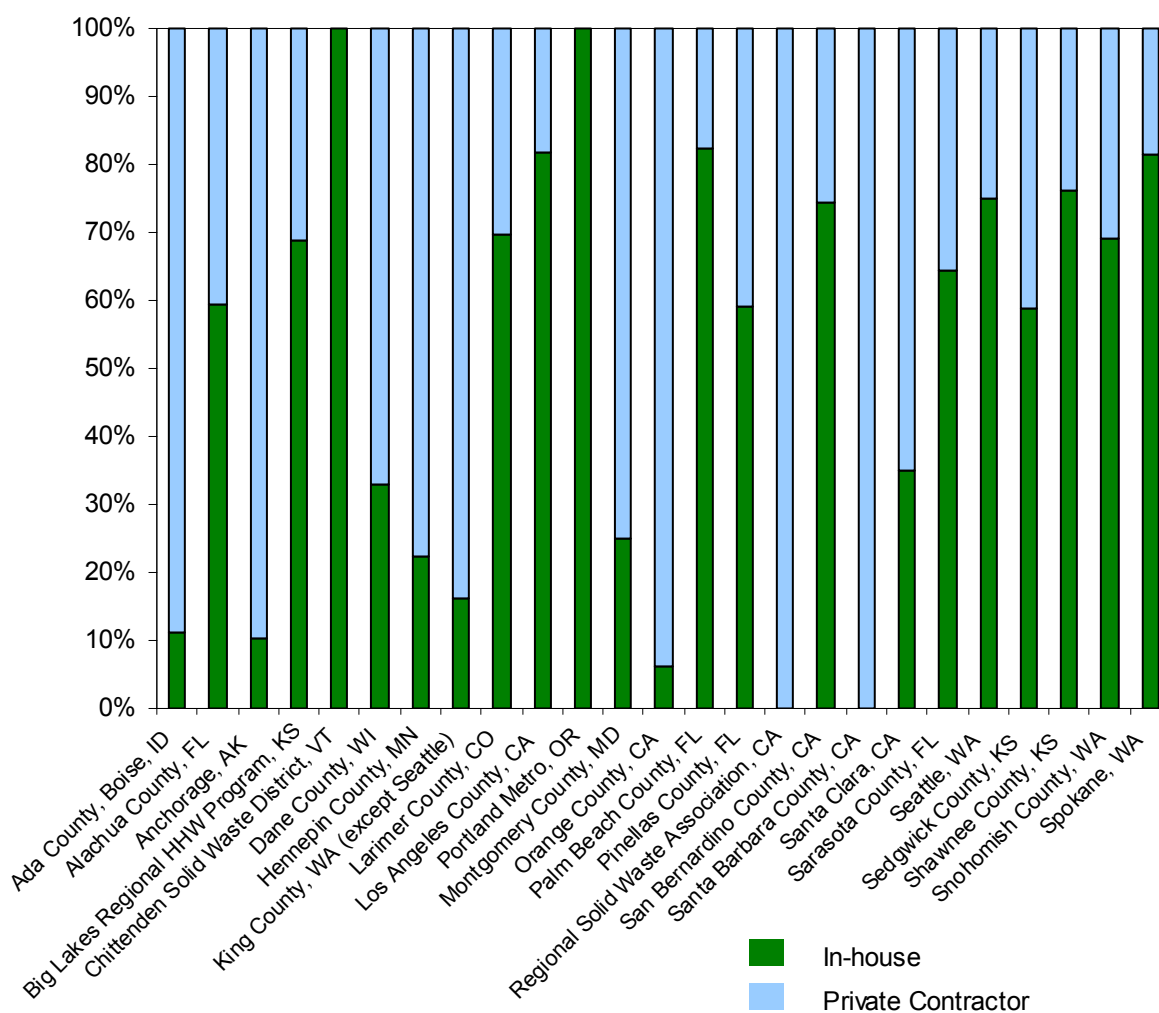
<b>Program</b>	<b>Total Cost</b>	<b>Cost per Pound</b>	<b>Cost per Participant</b>
Ada County, Boise, ID	\$653,000	\$0.67	\$38
Alachua County, FL	\$387,000	\$0.28	\$16
Anchorage, AK	\$828,720	\$0.80	\$51
Big Lakes Regional HHW Program, KS	\$193,954	\$0.21	\$39
Chittenden Solid Waste District, VT	\$465,320	\$0.83	\$45
Dane County, WI	\$334,750	\$0.71	\$39
Hennepin County, MN	\$5,445,118	\$0.73	\$55
King County (except Seattle), WA	\$2,271,632	\$0.85	\$75
Larimer County, CO	\$426,957	\$0.23	\$26
Los Angeles County, CA	\$5,090,813	\$0.57	\$81
Montgomery County, MD	\$1,000,000	\$1.23	\$87
Orange County, CA	\$3,949,277	\$0.63	\$44
Palm Beach County, FL	\$576,537	\$0.39	\$8
Pinellas County, FL	\$518,040	\$0.48	\$33
Regional Solid Waste Association, CA	\$757,200	\$0.90	\$70
San Bernardino County, CA	\$2,088,396	\$0.69	\$57
Santa Barbara County, CA	\$841,824	\$1.28	\$79
Santa Clara County, CA	\$2,490,089	\$1.15	\$104
Sarasota County, FL	\$681,600	\$0.45	\$72
Seattle, WA	\$2,118,734	\$2.02	\$129
Sedgwick County, KS	\$412,251	\$0.36	\$29
Shawnee County, KS	\$118,952	\$0.56	\$75
Snohomish County, WA	\$1,156,978	\$0.53	\$70
Spokane, WA	\$403,546	\$0.22	\$12
<b>Metro</b>	<b>\$3,484,800</b>	<b>\$0.85</b>	<b>\$66</b>
<b>Range</b>	<b>\$118,952 - \$5,445,118</b>	<b>\$0.21 - \$2.02</b>	<b>\$8 - \$129</b>
<b>Median</b>	<b>\$757,200</b>	<b>\$0.67</b>	<b>\$55</b>

## 5 In-house and Contractor-operated Programs

### 5.1 In-house and Contractor Costs

Only a few HHW programs are purely in-house or purely contractor-operated. Most programs include a mix of in-house and contractor costs, as shown in Figure 7. The figure shows the breakdown between in-house staff and contractors for reported program costs. Metro is one of two programs that reported essentially all in-house costs.

**Figure 7. Distribution of In-house and Contractor Costs for HHW Programs**



*Note: For Seattle's program, additional contractor costs are shared with King County and were not reported separately in the survey.*

## 5.2 Cost Comparisons

Though few programs are purely in-house or contractor-operated, the study classified programs into one of the two categories based on the distribution of their reported costs and program activities between in-house staff and private contractors. Contractor-operated programs show higher median total program costs, per-pound costs, and costs per participant, as shown in Table 13. One likely explanation for this difference is that some in-house programs may not fully account for and report their staffing costs for FTEs, since programs typically do not directly pay the wages and benefits for public employees. In contrast, HHW programs that pay outside contractors are more likely to pay directly for the costs of their operations and to track those costs. Contractor-operated programs collect a median figure of 72 pounds per participant, less than the median of 78 pounds that in-house programs collect from participants.

**Table 13. Cost Comparison of In-house and Contractor-operated HHW Programs**

Program Type	Median Program Cost	Median Cost per Pound HHW	Median Cost per Participant	Median Pounds per Participant
In-house	\$ 465,320	\$ 0.48	\$ 39	78
Private Contractor	\$ 1,635,816	\$ 0.82	\$ 72	72

## 5.3 Reported Benefits and Drawbacks of Program Operators

To explore the pros and cons of in-house and contractor-operated programs, our survey asked respondents to provide their opinions on the benefits and drawbacks of the two major program types. Not surprisingly, most comments favored the type of program that the respondent's jurisdiction provides – that is, in-house operators preferred in-house programs and *vice versa*. Some advantages, such as reduced costs and improved flexibility, were reported for both types of programs. Note that these benefits were reported by survey respondents and have not undergone an independent evaluation.

### Reported Benefits of In-house HHW Programs

According to survey respondents, reported benefits of in-house HHW programs include:

- Better customer service, including more direct personal contact with the public and greater consistency than with changing contractors;
- Cost-effectiveness: lower costs, longer hours, better cost control, and greater participation;
- Better control of costs and day-to-day operations;
- Streamlined operations, increased flexibility, and reduced overhead;
- Better suited for staffing permanent facilities, which may provide better service than events; can shift staffing from transfer stations and other facilities as needed;
- Can provide free or low-cost services to residents;

- Employ local citizens, provide benefits to workers, and spend taxpayer dollars locally;
- Better staff training;
- Incentives for waste reduction, recycling, reuse, and other waste prevention;
- Focused on the public interest, not a profit motive, and thus may select the best method for waste management, even when it is not the lowest cost option; and
- Better integration with other public and community services.

### **Reported Benefits of Contractor-operated HHW Programs**

Programs interviewed reported the following benefits of contractor-operated HHW programs, some of which are similar to the benefits reported for in-house programs:

- Access to broader expertise and resources beyond local government employees, including greater knowledge of current HHW regulations;
- Can be less expensive, including able to reduce costs through competition among contractors and typically lower upfront capital costs;
- Fewer issues with labor, including unions, and the contractor handles all staffing and labor issues;
- Faster implementation of programs and increased flexibility, including seasonal operations and occasional events;
- Less political influence on operations and less administration (bureaucracy);
- Less administrative burden and management workload for public agencies;
- Reduced liability; and
- May have improved data tracking and reporting capabilities.

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## 6 Conclusions

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Metro's household hazardous waste program offers more comprehensive services than other programs in terms of types and amounts of wastes collected, numbers and types of customers served, and availability of services. Programs with lower costs than Metro generally provide lower levels of HHW collection and management services.

Metro served nearly 53,000 participants in 2004, more than triple the median number of customers among programs surveyed. Metro collected more than 4 million pounds of HHW in 2004, nearly triple the program median and more than all but three programs (which had higher numbers of participants). Metro's two fixed facilities, each open six days per week, provided more days of service than fixed facilities in many other jurisdictions. Metro provided 60 days of mobile collection events in 2004, which is triple the median among programs surveyed. Metro does not offer door-to-door collection to residents or CEGs, but it does provide service to CEGs at its fixed facilities.

Metro handles more types of HHW, including highly hazardous content such as radioactive and explosive materials, than most other programs. In turn, Metro collects fewer automotive wastes, which are handled at relatively low cost in comparison to more hazardous materials, than most other programs.

In considering its program costs and services provided, Metro seeks to maintain an appropriate balance between controlling costs and providing a full range of valuable HHW services. Currently, Metro provides one of the most comprehensive HHW programs in the nation. Accordingly, its costs are higher than programs that provide fewer services and collect fewer categories of HHW materials, particularly highly hazardous wastes. Significant cost reductions for Metro would likely necessitate sizeable cutbacks in its current level of service and should be viewed in the context of total lifecycle costs, including human health and environmental concerns.

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## **Appendix A. Summary of HHW Programs Surveyed**

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This appendix provides brief descriptions of the programs included in this comparative study of household hazardous waste programs in the United States.

### **Ada County, Idaho**

Ada County has one fixed HHW facility, operated by both in-house staff and a private contractor. They also have about 10 mobile collection events per month in the county, which are run by both in-house staff and a private contractor. Three different cities help fund the mobile collection events. CEG wastes can be dropped off at the fixed facility. The program averaged about 200 CEG customers in 2004 during 104 operating days. This program does not solidify or landfill latex paint.

### **Alachua County, Florida**

Alachua County's program is primarily run by in-house staff. The county has six fixed HHW facilities that served about 24,000 participants in 2004. The county held 12 mobile collection events in 2004. The program offers CEG service at its fixed facilities. This program collected revenue of more than \$180,000 in 2004, as well as reimbursement from the wastewater utility for 35% of net cost, or more than \$225,000. The program also operates a reuse program, which diverted more than 3,500 gallons of HHW (about 30,000 pounds) in 2004; these materials are not included in the total pounds handled for 2004.

### **Anchorage, Alaska**

Anchorage's HHW program is primarily operated by a private contractor. The program has two main fixed facilities in its jurisdiction, plus an additional remote site that accepts only auto batteries and motor oil. One fixed facility is open six days per week, and the other is open three days per week. The program does not provide mobile collection events, but it does offer door-to-door collection for those who need it. CEG collection is available at the fixed facility and via door-to-door service.

### **Big Lakes Regional HHW Program, Northeast Kansas**

The multi-county program is primarily run by in-house staff that operated 10 fixed facilities and 25 mobile collection events in 2004. CEGs can drop off their material at fixed facilities. In 2004, each facility was open for 250 days.

### **Chittenden Solid Waste District, Vermont**

In Chittenden County, the program is run by in-house staff. The county has one fixed facility. In 2004, the facility had a total of 5,930 participants. The county had 39 collection events in their jurisdiction in 2004, plus 14 events that were out of their district. Wastes from CEGs are accepted at the fixed facility. Chittenden County has a number of revenue sources that offset some of the expenses: mobile program rental fees of \$45,826; non-district town user fees of \$6,876; latex paint sales of \$16,378; CEG revenues of \$42,192; and state grants of \$38,512. The program also had capital bond principal and interest expenses of \$44,142.

### **Dane County, Wisconsin**

Dane County has one fixed facility that is primarily run by in-house staff. In 2004, 8,516 people used the facility. The county has mobile collection events but none occurred in 2004. CEG collection is available at the fixed facility. This program does not accept any auto-related waste.

### **Hennepin County, Minnesota**

The county provides two fixed facilities which are primarily run by a private contractor. The county had 19 mobile collection events that operated a total of 29 days in 2004. The county does not provide service for CEGs. The fixed facilities also offer recycling drop-off, and one facility offers solid waste drop-off.

### **King County (except Seattle), Washington**

King County provides HHW collection service through mobile events and one fixed facility. King County primarily provides HHW service to areas outside of the City of Seattle, though the county provides some services in cooperation with Seattle. The fixed facility is primarily run by in-house staff members that perform all duties except transportation and disposal of hazardous waste. In 2004, the facility provided 208 operating days and served 13,387 participants. Private contractors help conduct some of the duties at the fixed facility, and contractors perform most tasks for the mobile collection events. King County's Wastemobile offered 92 mobile collection days in 2004. The HHW program does not provide collection for CEGs.

### **Larimer County, Colorado**

The Larimer County HHW program is largely run by in-house staff. The program is funded by tipping fees from the county and city owned landfill. In-house staff runs the one fixed facility except for transportation and disposal of hazardous waste. The county also has mobile collection events; they hosted one event in 2004, but a typical year includes two one-day events. These events are operated by in-house staff, volunteers, and a contractor. CEG collection is provided at the fixed facility, and the county also provides free on-site technical assistance to CEGs.

### **Los Angeles County, California**

Los Angeles County does not have a fixed HHW facility; all HHW collection services are provided through mobile events. In 2004, the county had 57 mobile collection days and served more than 62,000 participants. The mobile collection is primarily run by private contractors. No CEG collection is provided.

### **Montgomery County, Maryland**

Montgomery County has one fixed facility and offers mobile collection events. In 2004, the county held 21 mobile collection days. Mobile collection and the fixed facility are run largely by contractors. Wastes from CESGQs are accepted at the fixed facility. Auto-related waste is accepted only at mobile collection events.

### **Orange County, California**

Orange County has four fixed facilities, which served more than 90,000 participants in 2004. The program does not provide mobile collection events or CEG service. Contractor staff members perform most tasks related to collection, processing, and disposal of hazardous waste. Two in-house employees perform administrative and program management duties, and an additional in-house staff person serves as a contract supervisor.

### **Palm Beach County, Florida**

Palm Beach County has six fixed HHW facilities, which are primarily operated by in-house staff. Wastes from CEGs are accepted at the fixed facility locations. The program served 160 CEG participants in 2004. Palm Beach County does not offer mobile HHW collection.

### **Pinellas County, Florida**

Pinellas County has one fixed facility offering household hazardous waste collection four days per week. In-house staff members primarily run the fixed facility and mobile collection events, and contractors perform waste transportation and disposal. The county had 20 mobile collection days in 2004. Motor oil and oil filters are not accepted. The county's Swap Shop resulted in avoided costs of more than \$54,000, including collection of aerosols, batteries, corrosives, flammables, oxidizers, latex paint, and pesticides. Wastes from CEGs are accepted at fixed facilities and mobile collection events.

### **Regional Solid Waste Association, San Diego, California**

Contractors perform most responsibilities involved in running the HHW program. Two fixed facilities are located within the jurisdiction, and they served more than 10,000 people in 2004. In 2004, door-to-door collection replaced mobile collection events and served more than 700 households in its first year of operation. Wastes from CEGs are accepted at fixed facilities.

### **San Bernardino County, California**

San Bernardino County's HHW program is run primarily by in-house staff. They have 22 fixed facilities, with varying days of operation. Most operate one to two days per week; others operate one to two days per month. Private contractors transport and dispose of hazardous waste. The county does not offer mobile collection events, but door-to-door collection is available to households and CEGs. CEGs can also take their wastes to the main facility located in the city of San Bernardino.

### **Santa Barbara County, California**

Santa Barbara has one fixed facility for HHW collection. The facility is primarily run by a private contractor. In 2004, the county also hosted three mobile collection event days, run by in-house staff and private contractors. The county offers door-to-door collection to households by appointment, and wastes from CEGs are accepted at the fixed facility.

### **Santa Clara County, California**

Santa Clara County has three fixed HHW facilities that are run by in-house staff and contractors. In 2004, the fixed facilities served nearly 20,000 household participants and about 250 CEGs. The county offered 64 collection days at fixed facilities and six mobile collection events, run by in-house staff and contractors. In-house staff provide some door-to-door collection for households.

### **Sarasota County, Florida**

The Sarasota County HHW program is primarily operated by in-house staff. The county has two fixed HHW facilities, and the program is adding another facility in 2006. In 2005, the county initiated mobile collection events, hosting 14 in the year (no events were held in 2004). The program provides door-to-door collection to people who are unable to drive, an average of less than 30 people annually. CEG wastes are accepted at the fixed facilities only on Wednesdays.

### **Seattle, Washington**

Seattle has two fixed HHW facilities, which operate about 305 days annually. These facilities are primarily run by in-house staff, and the transportation and disposal of waste is performed by contractor staff. They do not provide mobile collection or CEG collection. Motor oil is not accepted at the fixed facilities, but it is collected at dedicated/limited material sites. Seattle also conducts some HHW activities jointly with surrounding King County.

### **Sedgwick County, Kansas**

Sedgwick County has one fixed HHW facility. In 2004, the county held five mobile collection events that serviced 692 residents. The program is run by both in-house staff and a private contractor. CEG service is provided through door-to-door collection and also at the fixed facility.

### **Shawnee County, Kansas**

Shawnee County has one fixed HHW facility, run primarily by in-house staff. The transportation and disposal of the hazardous waste is done by a private contractor. In 2004, the fixed facility served 1,589 customers and had 260 operating days. No CEG collection is provided.

### **Snohomish County, Washington**

Snohomish County has one fixed HHW facility, primarily operated by in-house staff, which served more than 16,000 people in 2004. In 2004, more than 400 CEGs used the fixed facility. Snohomish County did not have mobile collection events in 2004, but the county has held mobile events regularly in the past. (The Port of Edmonds runs an additional HHW facility in the county, but this site is dedicated to live-aboard boat residents. Its records are kept separately and are not included in the Snohomish County totals.)

### **Spokane, Washington**

Spokane has three fixed HHW facilities that are run by in-house staff. In 2004, the facilities were open 359 days each and together served more than 34,000 people. Door-to-door collection is run by volunteers in the community. A one-day event took place that served over 300 people. CEG service is provided at the fixed facilities. In 2004, CEGs were accepted for a total of 10 days, and 121 businesses participated.

## **Appendix B. HHW Program Online Survey Instrument**

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The following pages present a static version of the interactive, online survey instrument administered to household hazardous waste programs to gather data for this comparative study. The online version appeared on a dark background, so not all of the formatting translates well to this copy. The survey was available in alternate formats upon request, and the consultant also made telephone calls to all programs surveyed. The survey was fielded beginning in September 2005, with additional contacts in October and November. Subsequent follow-up on such topics as revenues, disposition of particular materials, and households in the service area is not reflected in this survey instrument.

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[Exit This Survey >>](#)

## **Cost Comparison of HHW Programs**

### **Introduction to the HHW Survey**

Thank you for participating in this survey commissioned by Portland Metro.

This survey contains about 40 questions and usually takes about 1 hour - 1 1/2 hours to complete. Please submit your responses by Friday, September 23, 2005.

The objective of this survey is to learn more about costs and operations for household hazardous waste programs throughout the nation. The results of this survey will be made available to you later this Autumn.

You do not have to answer all of the questions in one sitting, but can come back later to check, revise, or complete your answers. If you click "exit the survey," your responses on previous pages (but not the page you exited) will be saved. You can follow the link in your email invitation to return to the survey later at the page where you stopped.

Unless otherwise specified, the information you provide should correspond to the calendar or fiscal year 2004.

Ryan Barba of Cascadia Consulting Group, Inc. will follow up with you in the next week to assist you in completing the survey and answer any questions you may have. If you have any difficulty filling out or completing this survey, please contact Ryan at 1-800-242-9047, ext. 126.

**[Next Page >>](#)**



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 1 of 23 - Demographics

1. Please list the name of your jurisdiction.

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2. What is the total population of your HHW program's service area?

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[<< Previous](#)

[Next Page >>](#)





[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 2 of 23 - Total Program Cost

Below, please provide total 2004 costs associated with your HHW program. Do not include any capital costs, such as construction of new facilities in the total. If possible, please separate costs for **in-house** and **contractor** operations.

#### 3. Total costs of HHW program in 2004.

In-house costs	<input type="text"/>
Contractor costs	<input type="text"/>
Grand total	<input type="text"/>

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 3 of 23 - Program Costs

Below, please provide 2004 annual costs in each of the following categories. Do not include any capital costs, such as construction of new facilities in the costs for each category. If possible, please separate costs for **in-house** and **contractor** operations.

#### 4. Administrative and management costs.

In-house costs

---

Contractor costs

---

Grand total

---

Please identify all costs included in this category

#### 5. Processing and packaging labor costs.

In-house costs

---

Contractor costs

---

Grand total

---

Please identify all costs included in this category

#### 6. Disposal and transportation costs.

In-house costs

---

Contractor costs

---

Grand total

---

Please identify all costs included in this category

#### 7. Supply costs (e.g., drums)

In-house costs

---

Contractor costs

---

Grand total

---

Please identify all costs included in this category

#### 8. Public education/promotion costs.

In-house costs

---

Contractor costs

---

Grand total

---

Please identify all costs included in this category \_\_\_\_\_

**9. Annual maintenance costs (e.g., labor, equipment purchases, etc.).**

In-house costs \_\_\_\_\_

Contractor costs \_\_\_\_\_

Grand total \_\_\_\_\_

Please identify all costs included in this category \_\_\_\_\_

**10. Other costs.**

In-house costs \_\_\_\_\_

Contractor costs \_\_\_\_\_

Grand total \_\_\_\_\_

Please identify all costs included in this category \_\_\_\_\_



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 4 of 23 - Publicly vs. Contractor-operated Programs

11. In your opinion, what are the pros and cons of publicly operated vs. contractor- operated HHW programs?

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[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 5 of 23 - Staffing

12. Please list the number of full-time employees (FTEs) associated with your HHW program.

Total FTEs	<input type="text"/>
FTEs staffing fixed facilities	<input type="text"/>
FTEs staffing mobile collection	<input type="text"/>
Administrative FTEs	<input type="text"/>
Program management FTEs	<input type="text"/>
Other FTEs (specify)	<input type="text"/>
Notes	<input type="text"/>

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 6 of 23 - Program Facilities and Services

13. Are there permanent fixed HHW facilities in your HHW program?

Yes

☐

No

☐

Don't know

☐

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 7 of 23 - Fixed Facilities

14. How many fixed HHW facilities are located within your jurisdiction?

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[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 8 of 23 - Fixed Facilities Continued

Below, please complete the following for all combined **fixed** HHW collection facilities located within your jurisdiction in 2004.

#### 15. Operator (please check one)

- ☐ In-house staff
- ☐ Private Contractor
- ☐ Both (In-house staff and Private Contractor)
- ☐ Don't Know
- ☐ Other (please specify)

#### 16. Participation

Total number of participants that used fixed facilities in 2004

#### 17. Availability

Total number of operation days in 2004 at all fixed facilities

#### 18. Facility Area

Total square feet of all fixed facilities

[<< Previous](#)

[Next Page >>](#)





[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 9 of 23 - Mobile Collection

19. Are there mobile HHW collection events/facilities within your jurisdiction?

Yes

☐

No

☐

Don't know

☐

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

Page 10 of 23 - Mobile Collection Continued

20. How many mobile HHW collection events took place within your jurisdiction in 2004?

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[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

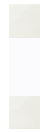
## Cost Comparison of HHW Programs

### Page 11 of 23 - Mobile Collection Continued

Below, please summarize the total **mobile** collection event statistics for your jurisdiction in 2004.

#### 21. Operator (please check one)

- ☐ In-house Staff
- ☐ Private Contractor
- ☐ Both (In-house Staff and Private Contractor)
- ☐ Don't Know
- ☐ Other (please specify)



#### 22. Participation

Total number of participants that attended mobile collection events in 2004 \_\_\_\_\_

#### 23. Availability

Total number of operation days in 2004 \_\_\_\_\_

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 12 of 23 - Door-to-Door Collection

24. Does your jurisdiction offer door-to-door collection service?

Yes

☐

No

☐

Don't Know

☐

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

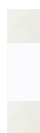
## Cost Comparison of HHW Programs

### Page 13 of 23 - Door-to-Door Collection Continued

Below, please summarize the total **door-to-door** collection event statistics for your jurisdiction in 2004.

#### 25. Operator (please check one)

- ☐ In-house staff
- ☐ Private Contractor
- ☐ Both (In-house staff and Private Contractor)
- ☐ Don't know
- ☐ Other (please specify)



#### 26. Participation

Total number of households served in 2004 \_\_\_\_\_

#### 27. Availability

Total number of operation days in 2004 \_\_\_\_\_

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

Page 14 of 23 - CESQG Service

28. Does your HHW program offer collection for Conditionally Exempt Small Quantity Generators (CESQGs)?

Yes

☐

No

☐

Don't Know

☐

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 15 of 23 - CESQG Service Continued

**29. What type(s) of collection service does your jurisdiction offer CESQGs? (please check one)**

- ☐ Fixed facility collection
- ☐ Door-to-door collection
- ☐ Both (fixed facility and door-to-door collection)
- ☐ Don't know
- ☐ Other (please specify)

**30. How many CESQG participants did your program have in 2004?**

Total

**31. What was the total number of operation days in 2004 for your CESQG collection service?**

Total

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 16 of 23 - Materials Collected

Latex Paint

32. Is latex paint accepted at your jurisdiction's HHW collection sites?

Yes

☐

No

☐

Don't know

☐

[<< Previous](#)

[Next Page >>](#)





[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 17 of 23 - Materials Collected Continued

Latex Paint

**33. Which of the following options best describe how latex paint is handled at your jurisdiction's HHW collection sites? (please check all that apply)**

	In-house staff	Contractor	Don't know
Give away in original container	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consolidate and recycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Solidify for landfill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recycle into paint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other beneficial reuse (e.g., in cement)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**34. For latex paint waste, how many pounds or what percent of total HHW were collected in 2004?**

Percentage

Pounds

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 18 of 23 - Auto Related Waste

35. Which, if any of the following auto-related wastes are accepted at your HHW collection sites?

	Yes	No	Collection at dedicated/limited materials sites	Don't know
Antifreeze	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lead acid batteries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil filters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Motor oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

36. For auto-related waste, how many pounds or what percent of total HHW were collected in 2004?

Percentage

Pounds

[<< Previous](#)

[Next Page >>](#)

## Cost Comparison of HHW Programs

### Page 19 of 23 - Other materials

**37. For each of the HHW materials listed below, specify whether they are accepted at your jurisdiction's HHW facilities, and whether there is a dedicated or limited material site available for the material.**

	Yes	No	Collected at dedicated/limited material sites	Don't know
Acids, bases and oxides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aerosols	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ammunition, other explosives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asbestos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Household batteries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compressed gases other than propane, in thick-walled cylinders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fluorescent tubes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medications, pharmaceuticals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mercury products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil-based paints	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCB-containing items	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides and poisons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Propane cylinders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radioactives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reactives and organic peroxides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Solvent and other flammables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[<< Previous](#)
[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 20 of 23 - Other Materials Continued

38. How many total pounds of HHW, including auto-related waste and latex paint, did your jurisdiction collect in 2004?

\_\_\_\_\_

39. How many pounds or what percentage of total HHW did your program landfill or incinerate, as opposed to recycle, treat, or fuel blend in 2004?

Percentage \_\_\_\_\_

Pounds \_\_\_\_\_

[<< Previous](#)

[Next Page >>](#)

## Cost Comparison of HHW Programs

### Page 21 of 23 - Staff Responsibilities

40. Below, please specify if the following services are performed by in-house staff or private contractors.

	In-house staff	Private contractor	Both In-house and Private contractor
Materials processing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Materials unloading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Segregation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Packaging and labeling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Labpacking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bulking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manifesting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unknown product/lab testing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facility maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CESQG collection and paperwork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Load checks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Abandoned toxics clean-up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facility emergency response	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

41. If in-house staff or contractors perform additional services besides those listed in the table above, please describe these in the box below.

## Cost Comparison of HHW Programs

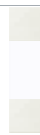
### Page 22 of 23 - Safety

**42. How many OSHA-reported staff injuries or lost-time accidents did your jurisdiction's HHW collection program have in 2004?**

---

**43. Below, please specify which of the following safety programs are available through your jurisdiction's HHW collection program?**

- ☐ In-house monitoring
  - ☐ Medical monitoring
  - ☐ Safety committees
  - ☐ Safety meetings
  - ☐ Method(s) for determining Personal Protection Equipment (e.g. masks, Tyvek suits, etc.)
  - ☐ Other (please describe)
- 



**44. Please briefly describe the safety programs in your jurisdiction's HHW collection program?**

In-house monitoring	<hr/>
Medical monitoring	<hr/>
Safety committees	<hr/>
Safety meetings	<hr/>
Method(s) for determining personal protection equipment (e.g. masks, tyvek suits, etc)	<hr/>
Other	<hr/>

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## Cost Comparison of HHW Programs

### Page 23 of 23 - Final Comments

You are almost done!

45. If you have any other comments concerning your HHW program, please provide them in the box below.

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46. To help us improve in the future, please let us know if you experienced any problems or have any comments on this online survey process. Thank you!

[<< Previous](#)

[Next Page >>](#)



[Exit This Survey >>](#)

## **Cost Comparison of HHW Programs**

### **Submit Survey**

You're nearly finished!

Don't forget to click "Done" when you're ready to enter your responses.

To finalize your survey, click the "Done" button. If needed, you can use the "Previous" link to review or complete any of your answers first. When you are done, you will be redirected to Portland Metro's HHW website.

Thank you very much for completing this survey!

Your responses along with others will be compiled and you will be mailed a final report in November. We greatly appreciate your time and effort.

[<< Previous](#)      [Done >>](#)